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The dome which had just been completed was barely out of sight from where I stood and no one at the observatory seems to have seen the actual flash. A peon however in the grounds of the Meteorological office about 100 meters away had a full view of both domes and buildings, was facing them and saw the flash just over and about the new dome. This accords well with the direction and distance from my point of observation.

After hearing of this observation I made a careful examination of the dome and in particular the connection of the copper cable with the track upon which the dome revolves, which forms the connection between the metal dome and one of the vertical I beams imbedded in the concrete for grounding the circuit. The lightning-rod proper extends about a meter above the highest part of the dome and terminates in a brush of heavy wire. No signs whatever of any discharge have been found at any point about the dome.

Close to the dome stands the wooden derrick which was used in its construction, the top of which is about two feet higher above the ground than the lightning-rod. Three wire cable guys lead off to trees, two of which actually touch the ground—but scarcely so—and a fourth to a brick building. The cable used for lifting did not touch the ground. Careful examination of all of these points failed also to disclose the slightest sign of a spark.

The three wires of the alternating power circuit pass close to both dome and derrick.

About 70 or 80 meters east and west are, respectively, three lightning rods on the director's residence, and one on the assistants' house. To the south some 100 and 150 meters, respectively, are the metallic tower for the windmill and water tank, about 50 feet high and the first astronomer's residence with two lightning points.

I have been particular in referring to these various conductors, for it seems probable that so many must have been instrumental in reducing the difference of potential somewhat.

The bolt which struck the dome was undoubtedly not a light one for it frightened badly a number of persons in the residences near by and was described by several as a very bright flash. I do not think, however, that it was an especially heavy one, possibly not so heavy as most of the others which struck in the vicinity.

The peon who saw it from the neighboring quinta, was seated at the time under a shed and watching the dome. He says the flash appeared to descend as a single ray, striking the lightning rod and then the whole surface of the metallic dome appeared to be covered with sparks or flashes.

At the time the bolt struck there was a peon inside the closed dome, cleaning the running-gear. When questioned he said he had felt nothing nor had he noticed anything unusual beyond the heavy noise.

It seems certain, therefore, that the dome was actually the principal point of discharge for a fairly heavy flash of lightning. (It is uncertain how much of the discharge was taken by the derrick, but it would appear to have been relatively small.) That the induced currents in the light and power lines were sufficiently heavy to blow the fuses in both.

This experience seems to be a fairly severe test for such a construction—a metallic dome surmounting concrete walls which are heavily reinforced with iron—the metal in the walls having a good ground connection and being connected also with the dome.

From the effects in this case one concludes that after the resistance of the air was broken down, the dome and metal in the walls were ample to carry off the discharge without the slightest apparent damage to either the structure or the man who was inside at the time.

C. D. Perrine

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SCIENTIFIC NOTES AND NEWS

An international committee has been formed to establish a foundation in memory of Henry Poincaré. A medal will be struck in his honor, and a fund will be established under the Paris Academy of Sciences to en-

courage or reward young scholars engaged in work in the directions in which Poincaré led, namely, mathematical analysis, celestial mechanics, mathematical physics and scientific philosophy. The members of the executive committee are Messrs. Appell, Lamy and Daboux, and there is a large and distinguished international committee. Copies of the medal will be sent to subscribers, who should send their subscriptions to M. Ernest Lebon, Rue des Écoles 4, Paris.

DR. ERWIN BAUR, of Berlin, who was to have been the Carl Schurz memorial professor at the University of Wisconsin during the first semester this year, was stopped by the English on his way to Java and was held for a time at Port Said. He managed, however, to get away and, after many difficulties, to return to Berlin, where he is now stationed in the Marine Office. It will be impossible for him to come to America before the end of the war.

DR. WOLDEMAR VOIGT, professor of mathematical physics at Göttingen, exchange professor from Germany, will probably not be able to give his courses at Harvard University during the second half-year, although it is still hoped that the war may not interfere with the arrangements between Harvard and the French and German universities.

PROFESSOR PIERRE BOUTROUX, of the department of mathematics of Princeton University, has remained in France in the service of the French government.

The British Medical Journal states that Dr. Noyons, professor of physiology, at Louvain, has recently distinguished himself by his heroic conduct in remaining with his wife among the ruins of Louvain ministering to the wounded—Germans as well as Belgians. When the population of the city was informed that every inhabitant of the town must leave immediately, in order that the town might be razed to the ground by artillery, Dr. Noyons and his wife decided to remain in order to protect the 150 wounded who could not be removed in time.

DR. WILHELM FOERSTER, professor of astronomy at Berlin, who holds a doctor's degree from Oxford, takes objection to the movement to renounce English degrees in a letter to the *Berliner Tageblatt,* quoted in the London *Times,* on the ground that it is unwise to proclaim a divorce from the "learned world" of England because of England's "wicked policy."

DR. EUGEN DE CHOLNOKY, professor of geography at the University of Kolozsvár, Hungary, has been elected president of the Royal Hungarian Geographical Society, Budapest, for the term expiring in 1917. The former president, Professor Louis de Lóczy, director of the Royal Hungarian Geological Survey and the well-known China explorer, became honorary president.

DR. OTTO FINSCH, the well-known ethnographer and geographer of Brunswick, celebrated on August 8 his seventy-fifth birthday.

DR. MAYNARD M. METCALF, professor of zoology at Oberlin College, has retired from the faculty and is devoting his entire time to research in a private laboratory recently erected on his own grounds.

SIR ERNEST SHACKLETON and the members of his Transantarctic Expedition left London on September 18 for the South Polar regions. The explorers departed in two sections, the portion for the Ross Sea or New Zealand side of the Antarctic leaving in the morning *via* Tilbury for Tasmania, and the Weddell Sea section, including Sir Ernest Shackleton, leaving for South America later in the day. The *Endurance,* the ship of the Weddell Sea party, left Plymouth on August 8. The Ross Sea ship *Aurora* is to leave some Australian port about the beginning of December.

DR. W. S. BRUCE, of the Scottish Spitzbergen Expedition, accompanied by Mr. J. V. Burn-Murdock, Mr. R. M. Craig and Mr. John H. Keoppern, arrived in the Tyne from Bergen on September 18. The party left Newcastle on July 9 for scientific exploration in Spitzbergen.

Professor R. H. Whitebeck, of the department of geology and geography of the University of Wisconsin, has been granted a leave of absence for the present semester and will spend the time in research work with the Carnegie Institution at Washington.

Dr. Lemuel Bolton Bangs, a prominent surgeon of New York City, professor in the University and Bellevue Hospital School, died, on October 4, at the age of seventy-two years.

The death in announced at the age of eighty-three years of Mr. Edward Riley, who was early associated with the production of Bessemer steel.

Sir Henry G. Howse, at one time senior surgeon to Guy's Hospital, and president of the Royal College of Surgeons, England, has died at the age of seventy-three years.

Dr. Eugen von Böhm-Bawerk, professor of economics in the University of Vienna, member of the Austrian upper house and formerly minister of finance, president of the Vienna Academy of Sciences, died on August 27, at the age of sixty-three years.

Dr. H. J. Johnston-Lavis, professor of vulcanology in the University of Naples, was killed in a motor accident last month.

The British Medical Journal calls attention to the fact that Louvain was in old times, as it is still, chiefly celebrated as a school of theology, but for anatomists it is associated with the great name of Andreas Vesalius. The reformer of anatomy was a student in the *pædagogium castri* and also in the *Collegium Buslidianum,* where he gained that knowledge of the ancient tongues which was to prove of such service to him in the scientific controversies of his later life. It was when he was at Louvain that Vesalius secured a human skeleton by climbing the gallows outside the town. He had to convey the bones home secretly, reentering the town by a different gate from that by which he had gone out, and articulating his stolen treasures in his rooms. He was afterwards spared the work of "resurrection" by the liberality of the burgomaster, who placed abundance of material for dissection and demonstration at his disposal. In 1536 or 1537 he dissected and lectured publicly. He seems, however, not to have been altogether comfortable in the theological atmosphere at Louvain, and some remarks which he made on the seat of the soul excited the suspicions of the heresy hunters.

In 1902 Dr. and Mrs. Christian A. Herter, of New York, gave to the Johns Hopkins University the sum of $25,000 "for the formation of a memorial lectureship designed to promote a more intimate knowledge of the researches of foreign investigators in the realm of medical science." According to the terms of the gift, some eminent worker in physiology or pathology is to be asked each year to deliver lectures at the Johns Hopkins University upon a subject with which he has been identified. The selection of the lecturer is to be left to a committee representing the departments of pathology, physiological chemistry and clinical medicine, and if "in the judgment of the committee it should ultimately appear desirable to open the proposed lectureship to leaders in medical research in this country there should be no bar to so doing." The committee named for this purpose consists of Drs. Welch, Abel and Barker. The eighth course of lectures on the Herter foundation will be given by Thomas Lewis, M.D., lecturer on diseases of the heart, University College Hospital Medical School, London. The lectures are being given in the auditorium of the Physiological building, at 4:30 P.M., as follows:

I. *October 6.*—"Observations Exemplifying Electrocardiography."

II. *October 8.*—"The Relation of Auricular Systole to Heart Sounds and Murmurs."

III. *October 9.*—"Observations upon Dyspnœa, with Especial Reference to Acidosis."

An examination for a food chemist at a salary of $100 to $150 a month under the civil service of the State of Illinois will be held on November 7. Further information can be obtained from the Illinois State Civil Service Commission, Springfield, Illinois.

THE Fuertes Observatory, of Cornell University, is to be torn down and rebuilt on a site north of Fall Creek Gorge, northeast of the campus. It will stand on a slight knoll at the southwest corner of the Hasbrouck farm, near the upper end of Beebe Lake.

THE Royal Zoological Society of New South Wales has begun the publication of *The Australian Zoologist,* the first number of which contains the annual report of the council of the society and of the zoological gardens that it conducts. The publication also contains a number of articles concerned with zoology in Australia.

LAST year the imports of mineral products, both crude and manufactured, exceeded $270,000,000. Of this total probably $200,000,000 represents raw materials and crude metals, the value of these imports being about 8 per cent. of that of the domestic output. In this list of imports the larger items named in the order of value are unmanufactured copper, precious stones, nitrate of soda, copper ore and matte, nickel, tin, iron ore, pig iron and steel, petroleum products, manganese ores and alloys, platinum, aluminum, pyrite, graphite, stone, potash and magnesite. This country has an abundant supply of most of these mineral products that are now imported in large amounts, and as to them it can be independent of foreign countries. The only essential minerals of the first rank of which the United States has no known supply at all commensurate with its needs are nitrates, potash salts, tin, nickel and platinum, the list thus comprising two essential mineral fertilizers and three very useful metals. There was a decrease in the output of magnesite in the United States from 10,512 short tons, valued at $84,096, in 1912, to 9,632 tons, valued at $77,056, in 1913. The only production in this country was in California, as heretofore. With the cutting off of the foreign supplies, due to the European war, however, the demand for the domestic product ought to increase greatly, especially in view of the new and shorter water route by way of the Panama Canal to the eastern United States. It is to be hoped that the sudden stimulus thus given to the domestic mining industry will build up a trade that will withstand the competition that must undoubtedly ensue when normal trade conditions are again established. The demand for the domestic product is restricted to the Pacific coast and Rocky Mountain region, as it has been impossible at the present railroad freight rates to ship to the points of largest consumption in the East. In answer to inquiries addressed to them by the Geological Survey, many owners of idle magnesite properties in the far West express the belief that with the opening of the Panama Canal they would be able to ship magnesite by sea to the east at a profit. Magnesite is used principally in the manufacture of refractory substances, such as brick, furnace hearths, crucibles, etc.; as magnesium sulphite, for digesting and whitening wood-pulp paper; in the crude form for making carbon dioxide; calcined and ground for the manufacture of oxychloride cement; and for miscellaneous applications in crude form or as refined magnesium salts. In the toilet and bath rooms of the rest rooms of the Panama-Pacific Exposition at San Francisco, magnesite flooring has been laid, about 5,000 square feet having been put down in each of the main buildings. The domestic product is used in this work. A copy of the advance chapter from "Mineral Resources for 1913" on the production of magnesite in 1913, just issued by the U. S. Geological Survey, may be obtained upon application to the director.

THE United States Bureau of Mines, in cooperation with the United States Geological Survey, has undertaken additional and more comprehensive investigations pertaining to the problem of mine caves and surface support. The immediate work of the mining engineers and geologists will comprise detailed studies of the extensive open-cut and underground mining operations in southwestern New Mexico. The field investigations will be conducted with special reference to earth pressures and surface subsidence in relation to the geological formation and mining conditions, and the equipment and efficiency of the

large mechanical installations in operation there. The Bureau of Mines, it will be remembered, has already done a large amount of work in the problem of mine caves. Director Holmes and several mining engineers served in an advisory capacity on the board of the Scranton Mine-Cave Commission. Mining engineers of the bureau gave the subject special attention in their studies of European mining methods and conditions. A mining engineer of the bureau served as a member and represented the cooperation of the bureau on the Pennsylvania State Anthracite Mine-Cave Commission, and in the investigations conducted in connection therewith extensive tests of mine-roof supporting materials were made at the Pittsburgh Experimental Station. The mining engineers and geologists of the bureau cooperated with the Scranton City Council, the Bureau of Mine Inspection and Surface Support, consulting engineers, and the Surface Protective Association in studies and reports for the development of practicable solutions of the serious mine caves occurring during recent years. Charles Enzian, mining engineer of the anthracite region, under the direction of Chief Mining Engineer George S. Rice, will represent the Bureau of Mines in this cooperative investigation.

UNIVERSITY AND EDUCATIONAL NEWS

The new buildings and grounds of Richmond College were occupied at the beginning of the academic year. After eighty-two years on the site in the heart of the city of Richmond, the college opens the session of 1914–15 in new buildings on a campus of 150 acres in the western suburbs of the city. The opening of Westhampton College, the new coordinate college for women, occurred on the same day. The new grounds and buildings of Richmond College for men have a valuation of $850,000 and those of Westhampton College for women of $400,000. The buildings are of collegiate Gothic architecture and were designed by Messrs. Cram and Ferguson of Boston and New York.

Captain Thomas J. Smith, of Champaign, Ill., has given land, valued at more than two hundred thousand dollars, to the University of Illinois, to make possible the erection of a building to house the department of music.

At the opening of the Boston University School of Medicine, Dean Sutherland announced that a gift of $100,000 had been received for the establishment of a maternity hospital.

We learn from the London *Times* that the Belgian minister in London has received a letter from the council of the senate of the University of Cambridge offering to professors, teachers and students of the University of Louvain such facilities in the way of access to libraries, laboratories and lectures, together with the use of lecture-rooms, as may secure the continuity of the work of that university during the present crisis. While the University of Cambridge is not in a position in its corporate capacity to offer direct financial assistance for the support of members of the University of Louvain, efforts are being made in Cambridge to provide such help privately. Mgr. Barnes, Roman Catholic chaplain of the University of Cambridge, has explained that the university had invited the University of Louvain to migrate to Cambridge, and there to continue its own separate studies, granting its own degrees and generally continuing its activities as at its own foundation, Cambridge supplying the facilities necessary for the technical carrying out of the work. Hospitality in the way of living accommodation and so forth would probably be offered by the individual colleges and by private residents. Through the American Legation at The Hague the professors of the University of Oxford have offered a home for the winter to the young children of the professors of the ruined University of Louvain. Dr. van Dyke has sent the message by two messengers over two different routes, hoping that one or the other may carry it through. The academic staff of University of London, University College, are prepared to offer hospitality to about 70 members of French and Belgian universities, whether professors, teachers, or students, men or women, who may find it necessary to